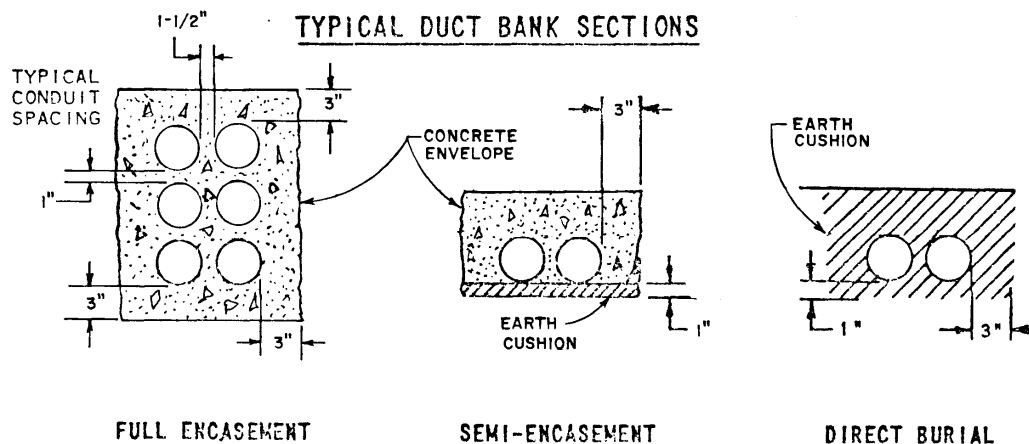


DUCT BANK REQUIREMENTS

1. SPACING AND CONCRETE COVERAGE AS SHOWN ARE MINIMUM.
2. SPACERS APPROVED BY THE DEPARTMENT SHALL BE PLACED AT THE FOLLOWING INTERVALS.

CONDUIT SIZE	2"	3"	3½"	4"	5"	6"
SPACING WITH ENCASEMENT	10'	10'		10'		
SPACING WITH NON-ENCASED	10'	8'		6'		

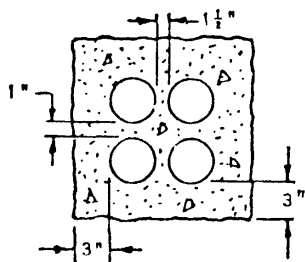
3. BASE SPACERS ARE REQUIRED ON ALL BANKS OF MORE THAN FOUR CONDUITS.
4. CONDUIT: TO BE OF AN APPROVED MAKE AS SET FORTH IN DRAWING UGS-100.
5. TYPES: "E.B." (TYPE I) FOR ENCASED AND SEMI-ENCASED INSTALLATIONS.
"D.B." (TYPE II) FOR DIRECT BURIAL AND INSIDE BORE CASING.
6. FOR GENERAL DUCT BANK, CONCRETE, AND TRENCHING REQUIREMENTS, SEE UGS-100.1.
7. INSTALL GROUND WIRE ONLY WHEN SPECIFIED ON WORKING DRAWING.



SPECIAL DUCT FORMATIONS

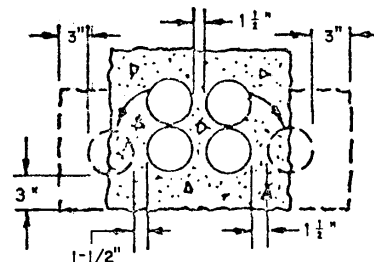
DUCT BANK TERMINATIONS

MINIMUM SEPARATION REQUIRED BETWEEN ALL TYPES OF DUCT AT DUCT ENTRANCES TO SUBSTRUCTURES

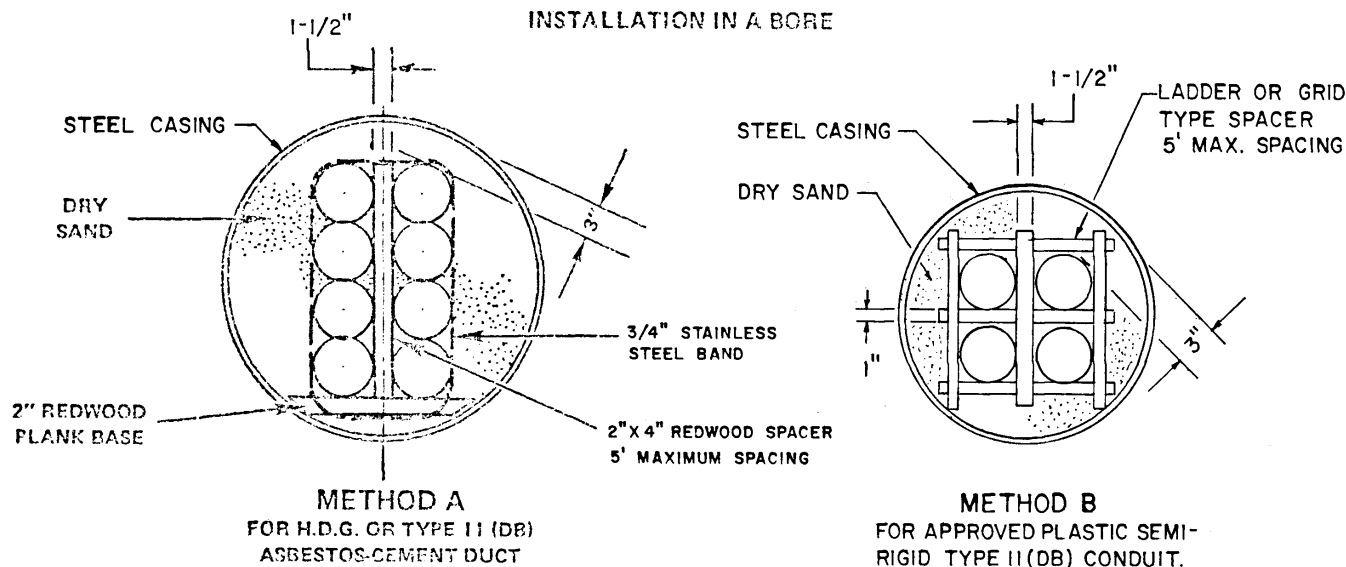


DUCT ROLLING

USED ONLY WHEN SPECIFIED OR SANCTIONED FOR DUCTS TO OCCUPY MINIMUM VERTICAL SPACE AND MAINTAIN REQUIRED COVER.



DUCT BANK REQUIREMENTS INSTALLATION IN A BORE



METHOD	NO. OF 5" CONDUITS	RECOMMENDED CASING SIZE	METHOD	NO. OF 5" CONDUITS	RECOMMENDED CASING SIZE	RECOMMENDED CASING SIZE USING CIRCULAR SPACER*
A	4	16 IN. O.D.	B	4	18 IN. O.D.	
A	6	22 IN. O.D.	B	6	26 IN. O.D.	22 IN. O.D.
A	8	28 IN. O.D.	B	8	32 IN. O.D.	28 IN. O.D.
A	10	34 IN. O.D.	B	10	38 IN. O.D.	
A	12	38 IN. O.D.	B	12	44 IN. O.D.	

*See UGS-125.1 for circular spacer details.

NOTES:

- Installation shall be made by machine boring or by jacking. Sluicing and jetting with water is not permitted. A limited use of water for lubrication of drills may be permitted, however, by special arrangement with local governing inspection authorities.
- A new steel casing will normally be used. Used casing, which shows little or no deterioration, may be used if judged satisfactory by a department inspector. The minimum allowable casing thickness is 1/4". State highway construction requires a 1/4" wall thickness if under 30" in diameter. A 3/8" wall thickness for diameters up to 42", and a 1/2" thickness for diameters 42" and greater. The type of construction should govern the wall thickness.
- Ducts used in the casing will be of the same material as used on either end of the bore.
- Horizontal and vertical spacing between ducts shall be as shown above for typical duct bank sections. The distance between spacers shall be limited to a maximum of five feet.
- Spacers shall be an approved type as recommended by the conduit manufacturers. If a block-type spacer is used, a 3/4 inch stainless steel band (loose enough to allow for expansion and contraction) shall be used at each spacer to tie the structure together. When a "ladder" — (or "grid" —) type spacer is used, the stainless steel band is omitted. In either case, spacers shall be installed and maintained in a vertical position. (See UGS-125.1 for spacers).
- Ducts shall maintain the same position entering and leaving the casing. After the ducts are in place, dry sand shall be blown in to fill all voids. Each end of the casing shall then be plugged with concrete.